

The specimen described and figured, U.S.N.M. Cat. No. 37399, comes from Guaymas, and measures: Length 58 mm.; diameter 30.5 mm.

Another specimen, U.S.N.M. Cat. No. 23698, an even larger specimen, measuring: Length 65.5 mm.; diameter 38 mm., also comes from Guaymas.

U.S.N.M. Cat. No. 111235 contains six tips from Panama; U.S.N.M. Cat. No. 96782, four tips from the U. S. Bureau of Fisheries Station 2837, off Cedros Island, 23 fathoms, on fine sand bottom, is believed to belong here.

As my references cite, Reeve created a homonym of *Conus cumingi* when he bestowed that name upon the specimen from Salango "West Colombia." Specimens from the Gulf of California and off the coast of Lower California seem to satisfy Reeve's second description and figure, but it is possible that the Colombian form may be distinct. I am therefore describing the Lower Californian material as a distinct species with which Reeve's homonym will probably prove to be conspecific.

NOTES ON WEST COAST EPITONIIDAE

BY A. M. STRONG

The writer had occasion recently to study a number of specimens of *Epitoniidae* from Vancouver Island, British Columbia, and in connection with this work it was found that changes will have to be made in the nomenclature of some west coast species. Dall in his "Summary of the Marine Shellbearing Mollusks of the Northwest Coast of America"¹ included two species under the subgenus *Opalia* H. & A. Adams, 1853, namely *O. wroblewskii* Mörch, 1876, and *O. evicta* De Boury, 1919.

The name *S. wroblewskii* was suggested by Mörch for the shell which had previously gone under the name *Scalaria borealis* Gould, 1852, that name having been preoccupied by Beck in 1839. Grant has called attention² to the fact that Tapparone-Canefri had also suggested³ the name *gouldi* for this shell in a paper dated

¹ Bull. 112, U. S. Nat. Mus., 1921, p. 113.

² Bull. Geol. Soc. Am., No. 43, 1932, p. 1064.

³ Jour. de Conch., vol. 24, 1876, p. 154.

April 1, 1876 (not 1874 as stated). The paper by Mörch to which Dall and Grant refer⁴ was also dated 1876. Dr. Pilsbry in a recent letter states that the date on which the publication containing the Mörch paper was issued is not definitely known but that Mörch first suggested the new name in a Danish paper⁵ presented in 1874 and published early in 1875. It therefore appears that the name *wroblewskii* has clear priority though the date and reference will have to be corrected.

OPALIA WROBLEWSKII (Pl. 2, fig. 10) is a northern shell not uncommon at Vancouver Island and on the Alaskan coast. In immature specimens there are 8 to 10 strong varices, a strong basal keel and a distinct basal disk. Fully mature specimens, which reach a length of 35 mm. or more, have the lower whorls nearly smooth, with the basal keel faint and the base rounded. Examination of a series of specimens from Forrester Island, Alaska, in the Willett collection, one of which is figured, show that a varying number of the upper whorls have a chalky outer layer which in the interspaces between the varices shows regular rows of microscopic punctations. This layer is rubbed off in beach-worn specimens and on the later whorls of the adult shell.

OPALIA CHACEI, n. sp. (pl. 2, fig. 9). Closely related to the preceding species, and in some collections confused with it, is a more southern shell which is somewhat smaller, heavier, and proportionately broader. The eight heavy varices continue over the body whorl to the well-defined basal disk at all stages of growth, and the punctuation of the outer layer of the shell is distinct in well preserved specimens. This may take the name of *Opalia chacei*. The type, No. 1045, in the collection of the Los Angeles Museum, Los Angeles, California, was collected by E. P. and E. M. Chace at Crescent City, California. It measures: length 28.3, maximum diameter 11.1 mm. Additional specimens were collected by Mr. and Mrs. Chace at Crescent City and on the coast of Mendocino County, California. The writer has collected specimens at Half Moon Bay, near San Francisco, and Mr. George Willett has dredged a specimen off Catalina Island.

⁴ Jour. Acad. Nat. Sci., Phila., ser. 3, vol. 8, 1876, p. 190.

⁵ Videnskabelige Meddelelser fra den nat. i Kjobenhavn, Aaret 1874, 1875, p. 251.

The type of *Opalia* is given by De Boury⁶ as *Scala australis* Lamarek, Recent, Australia, and is well figured by Reeve.⁷ It is quite similar to *O. chacei*, having similar heavy varices and basal disk bounded by a cord. An examination of a fresh specimen in the collection of H. N. Lowe shows definite indications of a similar punctate outer layer on the upper whorls. It would seem that this punctate outer layer should be considered one of the important systematic characters.

OPALIA EVICTA De Boury, 1919⁸ (Pl. 2, fig. 11, Forrester Island, Alaska, Willett coll.), is a new name for a shell referred to as *Scalaria pleurocostata* Carpenter by Stearns, Berry and Dall in his earlier writings. Specimens were undoubtedly so labeled by Carpenter, but do not seem to have ever been described by him. Dall attempted to validate the name in 1917⁹ by a description but the name was preoccupied by De Boury in 1913. The shell is quite similar to *O. chacei* but only about half as large, with the first few whorls rapidly expanding and the later whorls more cylindrical, giving a more crowded appearance to the 8 or 10 strong varices. The punctate surface of the outer layer of the shell is very distinct in fresh specimens. The specimens examined came from Forrester Island, Alaska; Vancouver Island, British Columbia, and off Catalina Island, California.

OPALIA MONTEREYENSIS (Dall), Pl. 2, fig. 12, described as *Cirsotrema montereyensis* Dall,¹⁰ was described from a single specimen, "probably young," of five whorls, measuring 2.5 mm. in length. It has the punctate surface, 9 solid varices and a conspicuous basal disk. The writer has a specimen dredged off Catalina Island which is very similar but with one more whorl and proportionally larger. It seems certain that this is the young of some species of *Opalia* and the only known species having similar apical whorls is *O. evicta*. In the absence of a satisfactory growth series it is impossible to make a positive statement but if this supposition is correct the name *O. evicta* De Boury, 1919, will have

⁶ Monog. Sealidae Viv. Fos., pt. 1, 1886, p. 26.

⁷ Reeve, Conch. Icon., vol. 19, pl. 1, fig. 3.

⁸ Jour. de Conch., vol. 64, 1919, p. 26.

⁹ Proc. U. S. Nat. Mus., vol. 53, 1917, p. 473.

¹⁰ NAUTILUS, vol. 20, 1907, p. 28.

to give way to *O. montereyensis* (Dall), 1907. The type, 110431 U.S.N.M., from off Del Monte, Cal., in 25 fms., is figured, $\times 10$. The type of *Cirsotrema* is given by De Boury as *Scala varicosa* Lamarck, which is quite different from typical *Opalia*, to which this shell belongs.

Dall placed four West Coast species in the subgenus *Nodiscala* De Boury¹¹ and several species have since been added to the list.¹² These all have the punctate surface and the basal disk but the varices are faint over the whorls, expanding to form cusps erenu-lating or pitting the sutures. The type of the subgenus *Nodiscala* is *Scala bicarinata* Sowerby according to De Boury. It is figured by Reeve¹³ as a recent shell from the Philippines. The description calls for a shell sculptured with obscure axial ribs and spiral grooves, the sutures pitted and the body whorl with two heavy spiral ridges. It would seem probable that the West Coast species are more nearly related to typical *Opalia* than to this species.

OPALIA TREMPERI Bartsch¹⁴ is described as having faint axial ribs forming cusps in the sutures. "The entire surface of the spire is marked by narrow spiral cords. The spaces which separate these cords are crossed by numerous, very slender, axial threads which give them a decidedly pitted appearance." The figure shows the characteristic punctate surface though the punctations are larger than in the species previously mentioned. There is no indication of a basal disk or peripheral cord. As far as is known this species is represented in the collections only by the type specimen. It is not typical of *Opalia* nor does it agree in all ways with the species which have been placed in the subgenus *Nodiscala*.

The use of *Opalia* as a genus under which can be grouped the species mentioned and probably a few other West Coast forms would give a more satisfactory arrangement than that used by Dall. This would make necessary a few changes in the writer's "Key to the Subgenera of West Coast Epitoniidae,"¹⁵ but as

¹¹ Proc. U. S. Nat. Mus., vol. 53, 1917, p. 474.

¹² Proc. Calif. Acad. Sci., 4th ser., vol. 19, No. 5, 1930, pp. 43, 46.

¹³ Reeve, Conch. Icon., vol. 19, pl. 8, fig. 60.

¹⁴ Proc. U. S. Nat. Mus., vol. 70, 1927, p. 3, pl. 1, fig. 8.

¹⁵ Proc. Calif. Acad. Sci., 4th ser., vol. 19, No. 5, 1930, p. 42.

many unfigured species remain to be investigated it is not attempted to do so at this time. Acknowledgment is made to Mr. George Willett of the Los Angeles Museum for the use of specimens, assistance in securing photographs and in the preparation of these notes.

THE FAUNA OF THE "CHAMPLAIN SEA" OF VERMONT

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The Pleistocene "Champlain Sea" has long been recognized in Vermont, and scattered references to its fauna can be found throughout the literature. Goldring,¹ discussing the mollusks of this sea in New York State, gives numerous references to Vermont localities.

During several brief field trips in the summers of 1933, 1934, and 1935, it was possible to visit most of the known Pleistocene fossil localities in the State of Vermont and to obtain material from them; in addition, numerous new localities were discovered and their fauna studied. Furthermore, fossils from the Pleistocene of Vermont were examined in the Museum at the University of Vermont in Burlington, and were borrowed from the Vermont Historical Society at Montpelier.²

Deposits of the "Champlain Sea" are thought to be of late-Wisconsin age, and extend throughout the entire St. Lawrence Valley from the Gulf almost to Lake Ontario (Prescott, Ont.), as well as along various tributaries of the St. Lawrence, and southward into Lake Champlain. The extent of this sea has been well mapped by Goldring. In Vermont, fossil shells have been found as far south as Chimney Point.

¹ Goldring, Winifred: The Champlain Sea, N. Y. State Mus. Bull. 239-40, pp. 53-94 (1922).

² These studies were made possible by funds from the Department of Geology of Princeton University and the Carnegie Institution of Washington.